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Cultivation Of Technical Hemp On Saline Soils With Drip Irrigation

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Annotation
This article describes that for the first time research was carried out on the culture of industrial hemp in the soil and climatic conditions of the Khavast district of the Syrdarya region, where 5 varieties were studied, which, with sufficient irrigation and compliance with agricultural cultivation technology, are quite possible to successfully cultivate. Breeding work was carried out by the method of individual selection of industrial hemp plants with the necessary improved characteristics for further research in order to create new local varieties for our Republic.
Keywords: *industrial hemp, varieties, plants, seeds, soil.*

Introduction

An important condition for the cultivation of technical cannabis is the content of tetrahydrocannabinol (THC) in the stems, leaves and cones in an amount of less than 0.1%.

The cultivation of industrial hemp yields a harvest in the form of seeds and tops. Hemp oil is pressed from raw seeds. It turns out with a greenish tint of light or dark tone [5].

To date, on the basis of this Law, the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No 770 dated December 7, 2020 "On measures to streamline the activities of the use and cultivation of cannabis plants for industrial purposes not related to the production or manufacture of narcotic drugs and psychotropic substances" has been developed.

According to the resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated June 18, 2019 "On measures to create an agro-industrial cluster in the Syrdarya region", RS Success Agro LLC, owned by the Emirati company Industrial Innovation Group LLC, was established [10].

For the first time in 2022, under the state project "Selection and creation of new varieties of technical hemp for cultivation in the soil and climatic conditions of the Republic", five foreign varieties of technical cannabis were planted in the collection nursery.

Hemp belongs to the family Cannabinaceaea (hemp) to the family Cannabis sativa L. Hemp is an annual bast fiber plant cultivated for fiber and seeds.

Technical hemp does not have any psychotropic effects, unlike subtypes of narcotic marijuana. Industrial varieties contain less than 0.1% tetrahydrocannabinol (THC), which causes a psychotropic effect [4; 9].

Today, technical cannabis is considered among the substitutes for cotton and synthetic materials, and not only in the textile industry, but also in the automotive, aircraft and shipbuilding, in the medical, space, defense, pulp and paper, construction industries and the production of sports products [1].

Common hemp is an annual plant. In terms of morphological features, the root, stem, leaves, flowers, and fruit of dicotyledonous hemp are similar to monocotyledonous hemp. The inflorescence of monoecious hemp depends on the sexual type:

- masculinized - loose panicle inflorescence;
- ideal monoecious plant - inflorescence, seed head;
- monoecious plant with a predominance of male flowers over female - inflorescence, seed head;
- monoecious feminized horse - inflorescence, seed head;
- ordinary mother - inflorescence, seed head.

The plant actively absorbs greenhouse gas, according to experts, 1 hectare of hemp can replace 4 hectares of forest. Hemp fiber is a durable plant fiber, from which, in addition to hemp, ropes, coarse linen, high-quality clothes, shoes, and linen are made. The wear resistance of such clothing and footwear is quite high [7].

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Hemp is divided into 3 types: northern, central Russian and southern. Central Russian hemp plants have a height of about 1.25-2 m, the leaves are of medium size, with the number of lobes from 5 to 9. The vegetation period is 80-120 days. The seeds are light gray; The weight of 1000 seeds is 13-18g. [3].

The leaf of hemp consists of a petiole and a blade. By the nature of the outline of the leaf blade, most cannabis leaves belong to compound leaves. The number of lobes and the size of the leaf blades are, to some extent, a varietal characteristic. The most developed leaves of Central Russian varieties are 9-11, and sometimes 13 lobes. The color of the leaves varies from light to intense green, depending on the variety and growing conditions. The specific gravity of the stem is 60-65% of the total dry weight of the plant. The remaining 30-45% are roots, leaves and seeds. This ratio is approximate and depends on different growing conditions. At a young age, the stem of hemp is soft, juicy, herbaceous, covered with glandular hairs, becomes woody with age, changes its shape, which from the base to the middle passes from rounded to hexagonal, and to the top to tetrahedral. The length of the hemp stem and its diameter within the same variety vary greatly depending on the growing conditions and the direction of the crop.

The hemp stem is a complex complex of tissues differentiated by position in the stem, structure and functionally it consists of the epidermis, collenchyma, bark parenchyma, primary bast fibers, bast parenchyma, conductive tissue, cambium, wood, and pith [2].

The root system of hemp consists of the main taproot and lateral roots. From the main root come the roots of the first and second order. The main root penetrates the soil to a depth of 2 m or more, and the lateral roots of the first order penetrate up to 80 cm.

The male flower consists of a pedicle, a five-leaved yellow-green perianth, and five stamens with long anthers attached to thin filaments. Female flowers, as well as male flowers, are located at the base of the branches emerging from the axil of the leaves. The female flower is surrounded by a she-like guillemot-bract, from which only the columns of the pistil stand out. The pistil consists of two thin, colorless stigmas fused at the base, and a single-nested ovary formed from two carpels, in the middle of which the ovule is placed. The female flowers of hemp are small; The beginning of their flowering is determined by the emergence of stigmas 1-2 mm of carpel outward.

The inflorescence of posconi is small loose racemes on the lateral branches and on the top of the stem. The inflorescence of the mother is the seed heads located in the axils of the leaves [6].

Research methodology

Experiments on the selection of technical hemp were laid in the Syrdarya region of the Khavast district in 2022. 5 varieties were planted in the collection nursery: Ferimon, Santhica, Felina, Fedora, Rodnik. Before sowing the seeds of technical hemp, an agrochemical analysis of the soil was taken. Sowing date is April 12, repetition is 4 times, the area of the accounting plot is 28 m^2, with underground drip irrigation (irrigation pipes pass at a depth of 20 cm, where water is supplied to the roots of plants under the pressure of pumps).

Observations, field and laboratory records and measurements were carried out in accordance with the "Guidelines for hemp breeding and industrial verification of completed research work" and "Guidelines for conducting field and vegetation experiments with hemp" (VNIILK, 1980).

Research results

The main goal of our research is the selection and creation of new varieties of technical cannabis suitable for cultivation in Uzbekistan for the production of seeds, oil and fiber, processing of agricultural raw materials and the production of competitive, exportable products.

Soil analyses carried out in the educational and scientific laboratory of Tashkent State Agrarian University together with the SAG AGRO MCHJ laboratory showed that the soils are poorly structured with a large number of dust particles. After watering, a fairly dense crust is formed, which then cracks. The arable layer contains humus 0.46 - 0.67 %, gross nitrogen 0.1330 - 0.1535 %, gross phosphorus 0.220 - 0.276 % and gross potassium 1.75-2.20 %, and in the subsurface horizon their content is slightly less.

Phenological observations of industrial hemp varieties are presented in Diagram 1.

As can be seen from Figure 1, the earliest mass shoots were observed in the Ferimon variety. The same variety stood out for flowering, seed setting and earlier technical ripeness of seeds. Later ripening of seeds was observed in Rodnik and Felina varieties on (102 and 104 days from mass germination).

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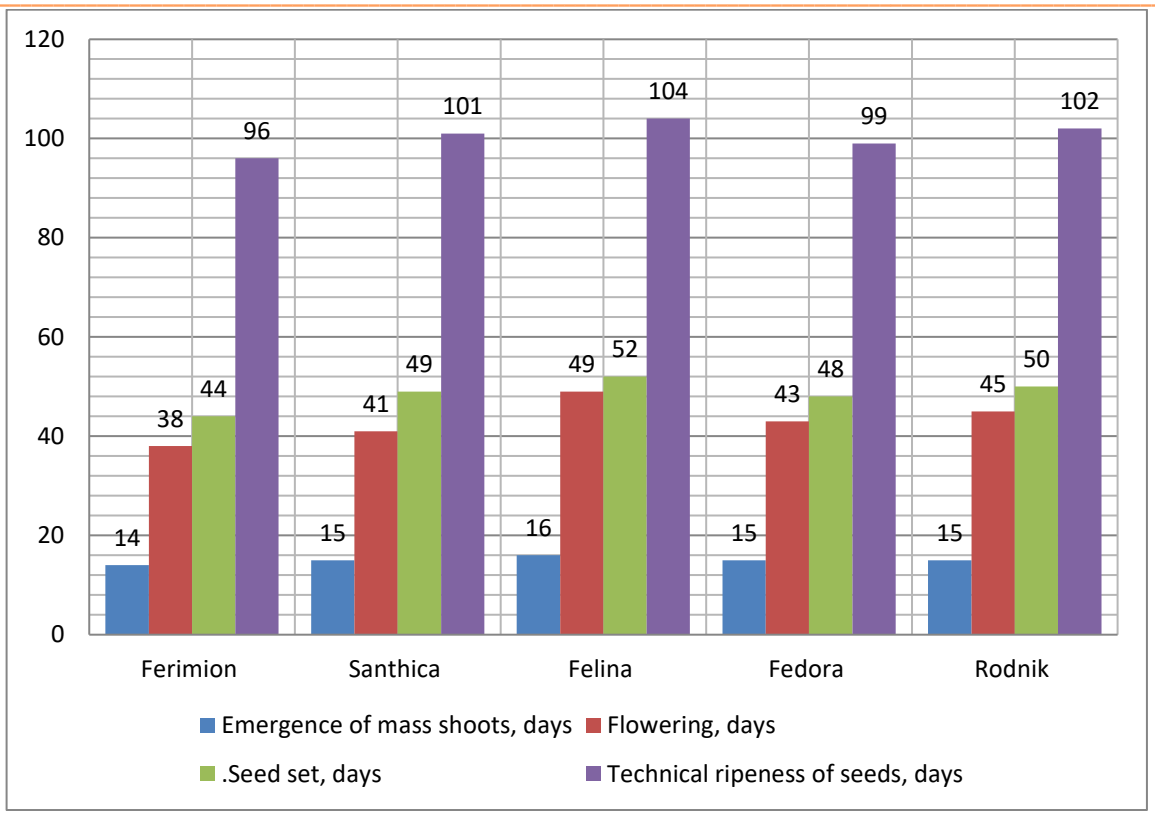

Figure - 1. Phenological observations of industrial hemp varieties for 2022-2023

Biometric measurements were carried out on the 90th day of mass germination, which showed that the highest plant height and the number of internodes were observed in the Santhica variety - 138.4 cm and 7 pcs., and the lowest in the Rodnik variety - 92.7 cm and 5 pcs, respectively.

Conclusion

On the basis of our research, the following conclusions can be made:

For the first time, research was carried out on the culture of industrial hemp in the soil and climatic conditions of the Syrdarya region, where 5 varieties were studied, which, with sufficient irrigation and compliance with cultivation technology, are quite possible to successfully cultivate.

Agrochemical analysis of the soil showed an increased salt content and low humus content, which must be replenished by applying mineral fertilizers during the growing season of plants.

Breeding work was carried out by the method of individual selection of industrial hemp plants with the necessary improved characteristics for further research in order to create new local varieties for our Republic.

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